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Interpreting Streamflow Forecasts

Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

Most Probable (50 Percent Chance of Exceeding) Forecast. This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance that the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right, due to errors resulting from future weather conditions and the forecast equation itself. This does not mean that users should not use the most probable forecast; it means that they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

To Decrease the Chance of Having Too Little Water

If users want to make sure there is enough water available for their operations, they might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in-between). These include:

70 Percent Chance of Exceeding Forecast. There is a 70 percent chance that the streamflow volume will exceed this forecast value. There is a 30 percent chance the streamflow volume will be less than this forecast value.

90 Percent Chance of Exceeding Forecast. There is a 90 percent chance that the streamflow volume will exceed this forecast value. There is a 10 percent chance the streamflow volume will be less than this forecast value.

To Decrease the Chance of Having Too Much Water

If users want to make sure they don't have too much water, they might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk of having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

30 Percent Chance of Exceeding Forecast. There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

10 Percent Chance of Exceeding Forecast. There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

Using the forecasts—an example

Using the Most Probable Forecast. Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Deeth between March 1 and July 31.

Using the Higher Exceedance Forecasts. If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

Using the Lower Exceedance Forecasts. If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

UPPER HUMBOLDT RIVER BASIN										
STREAMFLOW FORECASTS										
FORECAST POINT	FORECAST PERIOD	<-----DRIER----- FUTURE CONDITIONS -----WETTER----->								
		----- Chance of Exceeding -----								
		90%	70%	50% (Most Probable)		30%	10%	25 YR.		
		(1000AF)	(1000AF)	(1000AF) (% AVG.)		(1000AF)	(1000AF)	(1000AF)		
MARY'S RIVER nr Deeth	MAR-JUL	5.0	20.0		36	77		52	76	47
	APR-JUL	8.0	17.0		31	74		45	67	42
LAMOILLE CREEK nr Lamoille	MAR-JUL	6.0	16.0		24	79		32	43	31
		4.0	15.0		22	75		30	41	30
	APR-JUL	6.0	12.0		43	73		74	121	59
		MAR-JUL	6.0	12.0		43	73		74	121

For more information concerning streamflow forecasting ask your local SCS field office for a copy of "A Field Office Guide for Interpreting Steamflow Forecasts".

GENERAL OUTLOOK

SUMMARY

JANUARY 1, 1991

MUCH OF SOUTHERN AND CENTRAL IDAHO FACES UNCERTAINTY REGARDING THE COMING SEASON'S WATER SUPPLY. MOUNTAIN SNOWPACKS IN SOUTH-CENTRAL IDAHO CONTAIN ONLY ABOUT HALF OF THE NORMAL WATER CONTENT FOR THIS DATE, AND MANY RESERVOIRS ARE WELL BELOW NORMAL. NORTHERN IDAHO SNOWPACKS ARE ABOVE NORMAL, AND SHOULD ENSURE AN ADEQUATE WATER SUPPLY FOR THAT PORTION OF THE STATE. THE REMAINING 3-4 MONTHS OF THE WINTER ACCUMULATION SEASON WILL BE CRITICAL IN DETERMINING THE FATE OF SOUTHERN AND CENTRAL IDAHO'S WATER SUPPLY IN 1991.

SNOWPACK

Idaho's mountain snowpack exhibits a pattern similar to the last several years, with above normal amounts in the North and below normal amounts in the South. January 1 basin snowpack measurements range from a high of 150% of normal in the Moyie River basin to only 28% in the Camas Creek basin near Fairfield. Northern Idaho reports near to above average snowpacks while the upper Snake River basin in eastern Idaho and western Wyoming reports near to slightly below normal conditions. Basins on the south side of the Snake River report snowpacks in the 70 to 90% of normal range. Areas with very low snowpack (near 50% of normal) include the Wood, Lost, Weiser, Payette, and Boise River basins. Above normal snowfall will be needed for the rest of the winter to make up the snowpack deficit in these areas.

PRECIPITATION

The 1991 water year began with a familiar pattern in October and November: above normal precipitation in the North and below normal precipitation in the South. Several stations in northern Idaho received more than twice their normal precipitation in October and November, while some southern Idaho stations received less than half of their normal complement. December provided a more equitable distribution of precipitation: the entire state received below normal amounts. On December 19, an arctic air mass invaded Idaho with record breaking cold temperatures. Boise recorded the lowest temperature on record on December 23 with a low of -25 degrees. The National Weather Service Outlook for January calls for normal precipitation and below normal temperatures.

RESERVOIRS

Reservoir storage as of January 1 varies widely across the state. Northern Idaho reports near normal storages, while the rest of the state reports below normal storages in response to last year's high demand on stored irrigation water. The major exception is the Payette River basin, where Cascade reports 117% of average storage and Deadwood reports 107%. The lowest storages are reported in central and southern Idaho -- Magic reservoir: 9% of capacity (18% of average), Oakley reservoir: 9% of capacity (30% of average), and Salmon Falls reservoir: 6% of capacity (26% of average). Storage in nine key reservoirs on the Snake system is 51% of capacity (74% of average). Combined storage in the three major reservoirs on the Boise system is 412 thousand acre feet, or 39% of capacity (68% of average). Current indications are that the Boise system will not fill, however, an adequate water supply is expected.

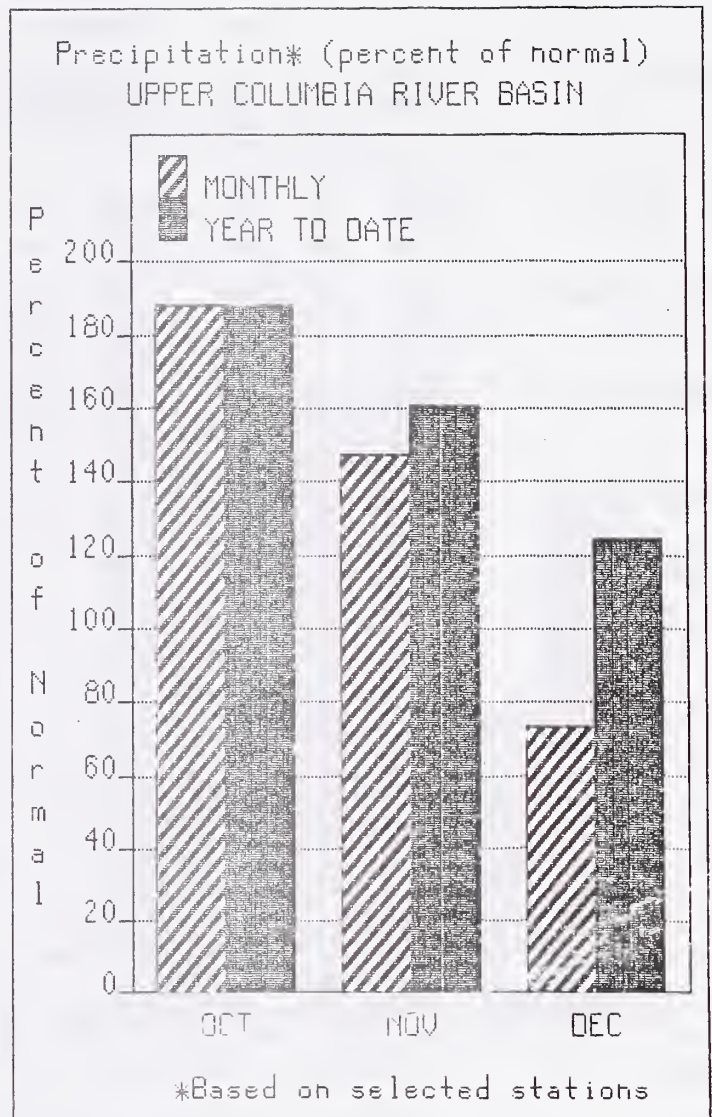
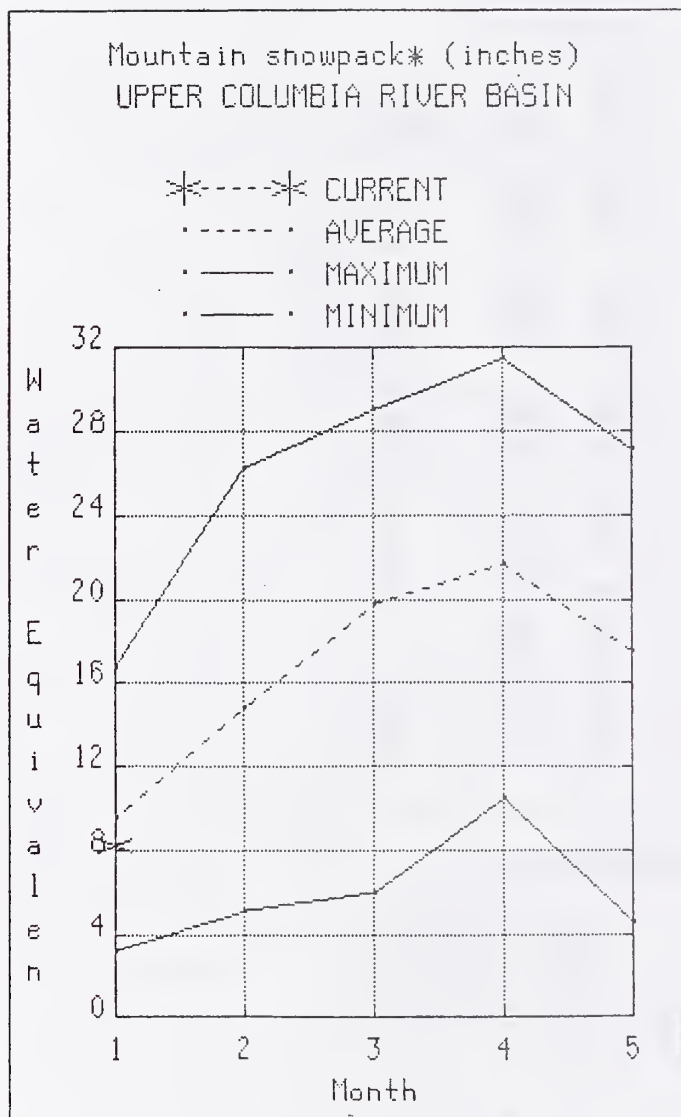
STREAMFLOW

Fall streamflow in northern Idaho was well above normal, with some flooding reported in the Coeur d'Alene River basin in November. The rest of central and southern Idaho had below to well below normal fall streamflow, ranging from about 60% of average in the Boise and Payette basins to 85% in the upper Snake basin. Forecasts for the coming runoff season vary widely around the state. Central Idaho watersheds are in the well below normal category and range from 34% of average on the Big Wood River to 71% for the Deadwood River. The upper Snake and southside Snake basins are forecast below average, ranging from 53% of normal on the Owyhee River to 88% on the Teton River and the Snake near Moran. Northern Idaho streams are forecast to produce above normal seasonal volumes this year, ranging from 109 to 132% of normal.

For more information contact your local SCS field office.

Upper Columbia River Basin

JANUARY 1, 1991



WATER SUPPLY OUTLOOK

Above normal precipitation, both rain and snow, have left the Idaho Panhandle in excellent shape with regards to water supply. October rainfall exceeded 200% of normal at many mountain locations, improving soil moisture conditions prior to the buildup of the mountain snowpack. This was followed by very heavy snowfall with occasional warm rains. Snowpacks currently range from 150% of normal in the Moyie River basin to 90% in the Priest River basin. Rathdrum Creek, a low elevation watershed, reports 54% of average snowpack due to the warm rains and resulting snowmelt. All streams in the upper Columbia River basin are currently forecast to produce above normal flows, ranging from 110 to 132% of average. Unless precipitation patterns change radically, northern Idaho should be guaranteed an adequate water supply for 1991.

UPPER COLUMBIA RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						25 YR. (1000AF)
		DRIER		CHANCE OF EXCEEDING *		WETTER		
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
KOOTENAI at Leonia (1,2)	APR-SEP	8360	10000	11100	132	12200	13800	8441
	APR-JUL	7270	8740	9650	131	10600	12000	7340
	APR-JUN	5840	7060	7790	132	8520	9620	5899
CLARK FORK at Whitehorse Rpds (1,2)	APR-SEP	9630	13000	15100	113	17200	20500	13370
	APR-JUL	8750	11700	13700	113	15700	18600	12150
	APR-JUN	7460	10000	11700	113	13400	15900	10360
PEND OREILLE LAKE inflow (1,2)	APR-SEP	10900	14400	16800	113	19200	22700	14930
	APR-JUL	9960	13100	15300	112	17500	20700	13650
	APR-JUN	8600	11400	13300	113	15200	17900	11780
PRIEST nr Priest River (1,2)	APR-SEP	660	855	990	111	1130	1320	893
	APR-JUL	620	800	930	111	1060	1240	838
COEUR D'ALENE at Enaville (1)	APR-SEP	500	745	910	110	1070	1320	830
	APR-JUL	475	715	870	110	1030	1250	789
ST. JOE at Calder	APR-SEP	1010	1260	1430	112	1600	1850	1281
	APR-JUL	965	1200	1360	112	1520	1760	1211
SPOKANE nr Post Falls (1,2)	APR-SEP	1660	2540	3120	111	3700	4570	2820
	APR-JUL	1610	2460	3020	111	3580	4410	2723

RESERVOIR STORAGE		(1000AF)		WATERSHED SNOWPACK ANALYSIS				
RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
HUNGRY HORSE	3451.0	2840.0	2525.0	2649.0	Kootenai ab Bonners Ferry	28	234	153
FLATHEAD LAKE	1791.0	1255.0	1358.0	1340.0	Moyie River	2	260	150
PEND OREILLE	1561.2	598.8	591.0	744.9	Pend Oreille River	75	170	121
NOXON RAPIDS	335.0	328.7	321.3	318.1	Clark Fork River	56	162	102
COEUR D'ALENE	291.2	157.2	161.9	207.7	Priest River	5	190	90
PRIEST LAKE	97.7	25.0	25.0	35.2	Rathdrum Creek	1	327	54
					Hayden Lake	0	0	0
					Coeur d'Alene River	9	230	100
					St. Joe River	5	211	104
					Spokane River	14	221	102
					Palouse River	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

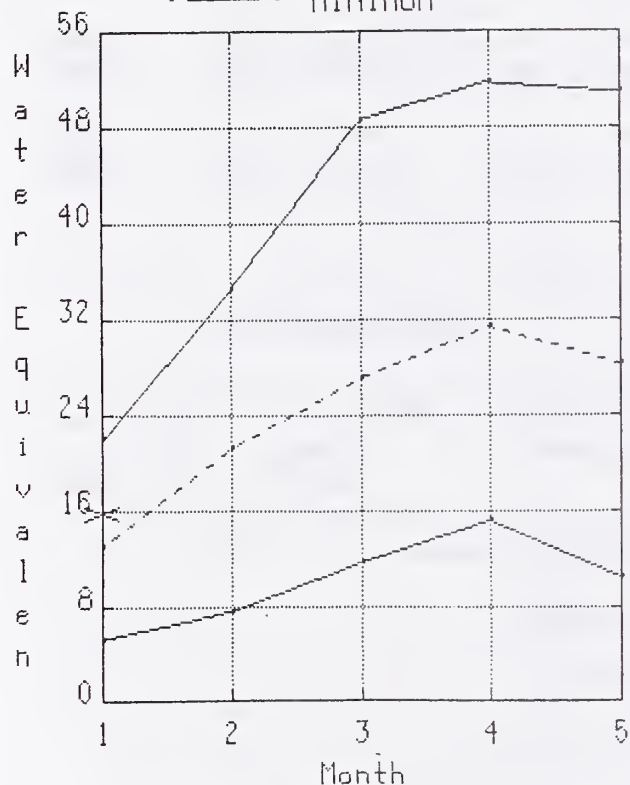
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Clearwater River Basin

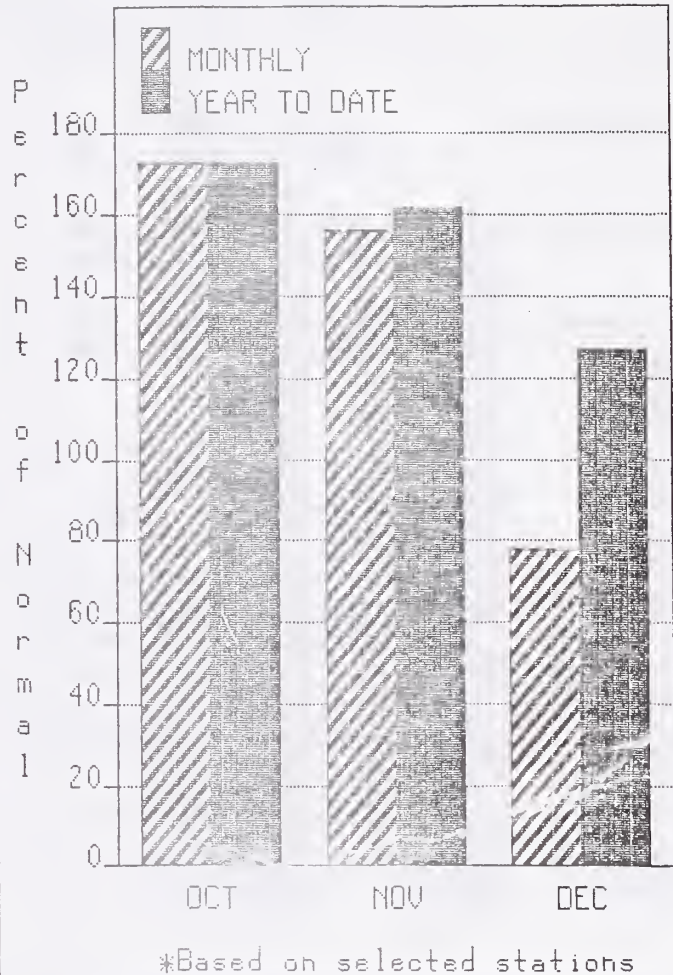
JANUARY 1, 1991

Mountain snowpack* (inches)
CLEARWATER RIVER BASIN

--- CURRENT
- - - AVERAGE
- - - MAXIMUM
- - - MINIMUM



Precipitation* (percent of normal)
CLEARWATER RIVER BASIN



WATER SUPPLY OUTLOOK

The Clearwater River basin reports some of the highest snowpacks in the state, with all watersheds reporting above normal conditions. Snowpacks in the Lochsa and Selway River basins (131 and 115% of normal, respectively) point to an excellent whitewater boating season. Streamflow forecasts range from 123% of normal for Dworshak reservoir inflow to 109% for the Clearwater at Orofino. Reservoir storage in Dworshak is 106% of normal and 74% of capacity. Current conditions indicate an excellent water supply is expected for the Clearwater River basin for the 1991 season.

CLEARWATER RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER ----- FUTURE CONDITIONS ----- WETTER ----->						25 YR. (1000AF)
		CHANCE OF EXCEEDING *						
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
DWORSHAK RESERVOIR inflow (1)	APR-SEP	2350	3160	3690	123	4220	5030	3010
	APR-JUL	2200	2960	3460	123	3960	4710	2822
CLEARWATER at Orofino (1)	APR-SEP	3250	4680	5610	109	6540	7950	5163
	APR-JUL	3080	4430	5310	109	6190	7530	4889
CLEARWATER at Spalding (1,2)	APR-SEP	5530	7870	9450	113	11000	13400	8378
	APR-JUL	5220	7440	8930	113	10400	12700	7916

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE ; CAPACITY ;	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
	;	THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
DWORSHAK	3467.8	2576.2	2460.5	2431.0	North Fork Clearwater	10	240	115
					Lochsa River	5	225	131
					Selway River	2	181	116
					Clearwater River	14	228	115

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

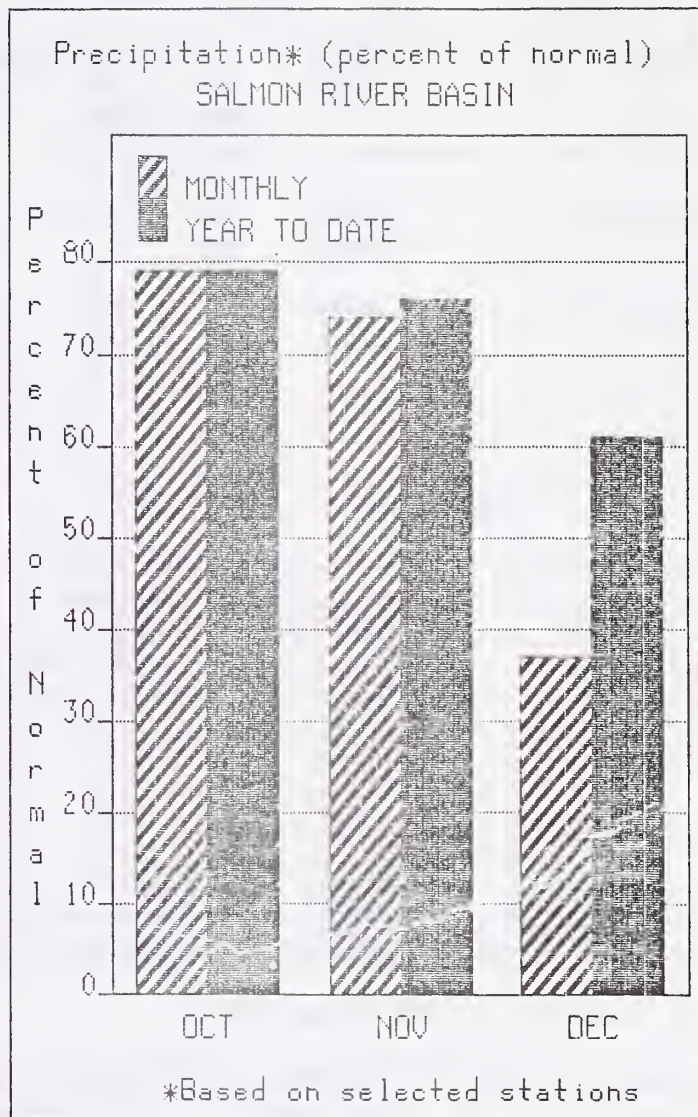
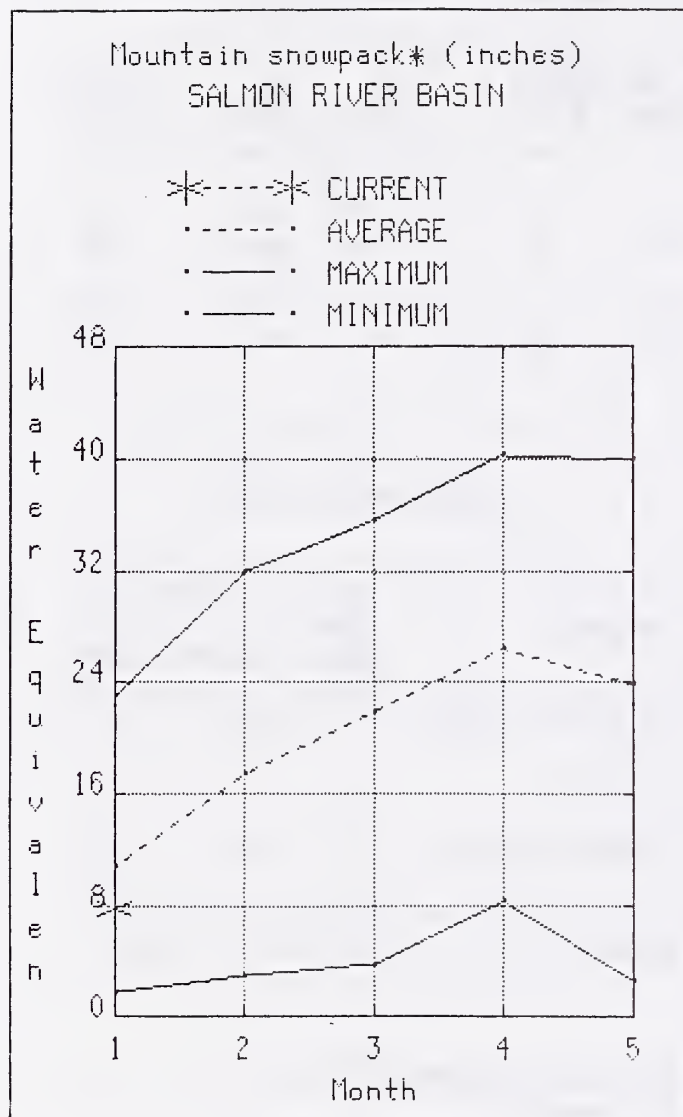
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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Salmon River Basin

JANUARY 1, 1991



WATER SUPPLY OUTLOOK

The Salmon River is once again the breaking point between above normal snowpacks in the North and below normal conditions in the South. The Salmon basin currently reports a 68% of normal snowpack. Streamflow forecasts reflect the below normal conditions, and range from 67% of normal for the Salmon at Salmon to 68% for the Salmon at Whitebird. With only 40% of the winter accumulation season behind us, there is still room for conditions to improve if precipitation patterns change.

SALMON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER ----- FUTURE CONDITIONS ----- WETTER ----->						
		CHANCE OF EXCEEDING +						25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
SALMON at Salmon (1)	APR-SEP	205	510	725	67	940	1240	1077
	APR-JUL	175	430	615	67	800	1060	919
SALMON at White Bird (1)	APR-SEP	2170	3680	4750	68	5820	7360	7007
	APR-JUL	1960	3330	4290	68	5250	6640	6322

RESERVOIR STORAGE		(1000AF)	WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE ;	** USEABLE STORAGE **		WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
	CAPACITY ;	THIS YEAR	LAST YEAR AVG.			
				Salmon River ab Salmon	6	140 62
				Lemhi River	1	113 73
				Salmon River Total	17	152 63

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

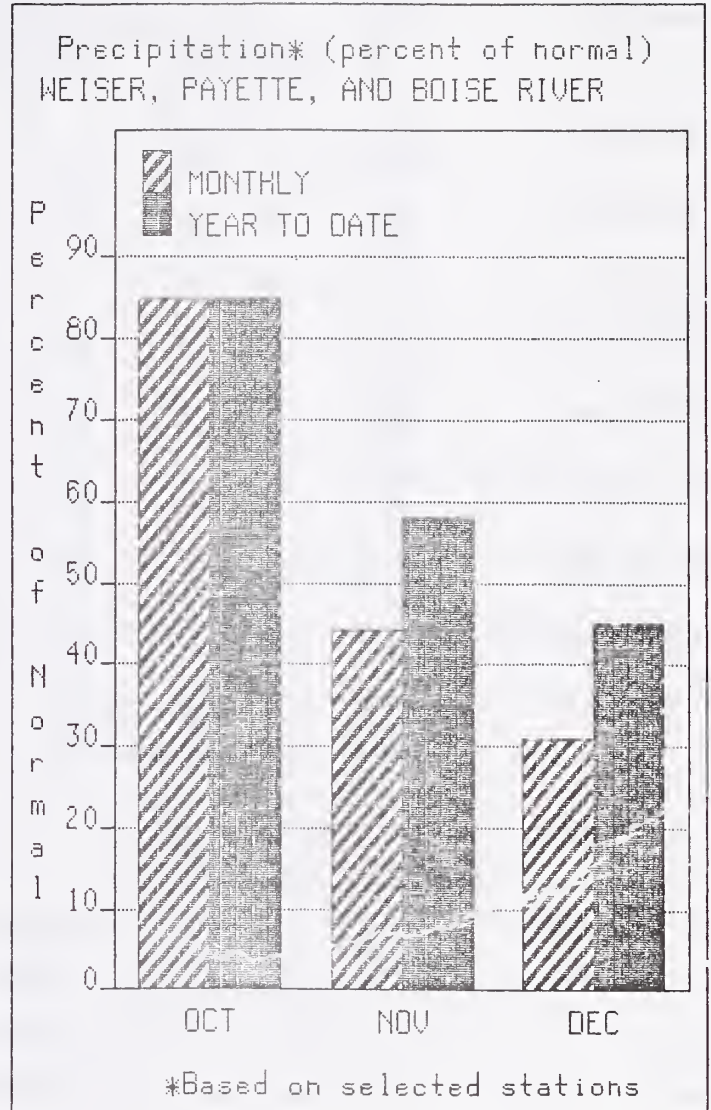
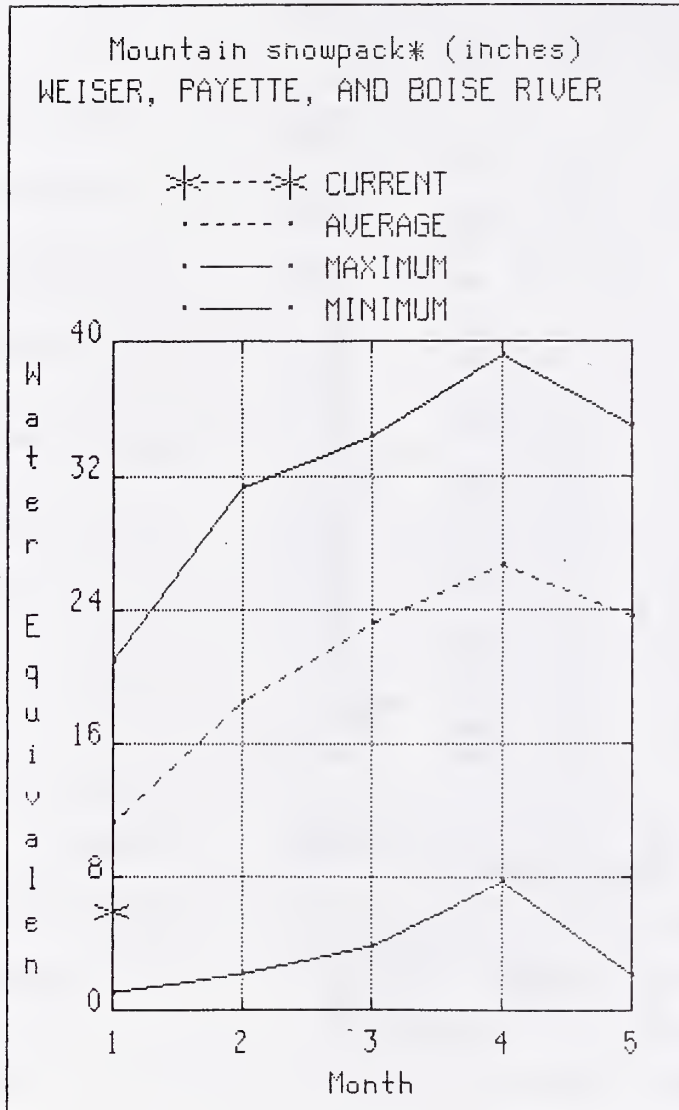
The average is computed for the 1961-1985 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Weiser, Payette, and Boise River Basin

JANUARY 1, 1991



WATER SUPPLY OUTLOOK

Mountain snowpacks in the west central mountains are once again starting off well below normal, a familiar story for four out of the last five years.

Streamflow forecasts mirror these snowpack figures, and range from 47% of normal for the Weiser River to 71% for the Deadwood River. Combined storage in the 3 major reservoirs on the Boise system is 412 thousand acre feet, or 39% of capacity (68% of average). Current indications are that the Boise system will not fill, however, an adequate water supply is expected.

WEISER, PAYETTE, AND BOISE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		DRIER		CHANCE OF EXCEEDING *		WETTER		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
WEISER nr Weiser (1)	APR-SEP	89	128	210	47	290	475	444
	APR-JUL	83	122	198	48	275	445	414
SF PAYETTE at Lowman	APR-SEP	189	270	325	63	380	460	512
	APR-JUL	156	235	285	63	335	415	454
DEADWOOD RESERVOIR inflow (1)	APR-JUL	49	76	101	71	126	153	143
NF PAYETTE at Cascade (1,2)	APR-SEP	197	325	380	67	435	565	568
	APR-JUL	184	300	355	67	410	525	531
NF PAYETTE nr Banks (2)	APR-SEP	270	400	490	66	580	710	737
	APR-JUL	255	375	460	67	545	665	691
PAYETTE nr Horseshoe Bend (1,2)	APR-SEP	505	975	1200	64	1420	1900	1862
	APR-JUL	440	895	1100	64	1310	1760	1717
BOISE nr Twin Springs (1)	APR-SEP	275	410	485	67	560	695	722
	APR-JUL	250	375	445	67	515	635	664
SF BOISE at Anderson Rnch Dm (1,2)	APR-SEP	155	240	310	50	380	465	619
	APR-JUL	145	225	290	50	355	435	578
BOISE nr Boise (1,2)	APR-SEP	340	720	895	55	1070	1450	1628
	APR-JUL	295	665	830	55	995	1360	1508
	APR-JUN	285	595	735	55	875	1190	1334

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVG.			
MANN CREEK	11.3	2.0	2.9	4.2	Mann Creek	1	185 49
CASCADE	703.2	490.1	454.0	419.7	Weiser River	4	175 47
DEADWOOD	162.0	78.9	82.6	73.7	North Fork Payette	7	169 58
ANDERSON RANCH	464.2	180.5	263.7	319.9	South Fork Payette	7	189 52
ARROWROCK	286.6	161.5	80.7	193.8	Payette River Total	14	178 55
LUCKY PEAK	307.0	70.0	87.7	94.5	Middle & North Fork Boise	7	172 54
LAKE LOWELL (DEER FLAT)	177.0	56.5	106.3	126.0	South Fork Boise River	8	172 46
					Boise River Total	16	209 53
					Canyon Creek	1	0 31

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

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BIG WOOD, LITTLE WOOD, BIG LOST, AND LITTLE LOST RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS							25 YR. (1000AF)
		CHANCE OF EXCEEDING *							
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)		
BIG WOOD nr Bellevue	APR-SEP	11.0	51	91	43	131	191	214	
	APR-JUL	10.0	45	84	42	124	182	198	
BIG WOOD bl Magic Dam (2)	APR-SEP	44	68	116	34	175	260	338	
	APR-JUL	42	64	110	34	168	255	322	
LITTLE WOOD nr Carey	APR-SEP	13.0	29	48	45	67	83	107	
	APR-JUL	12.0	26	45	45	64	77	99	
BIG LOST at Howell Ranch nr Chilly	APR-SEP	67	105	131	60	157	195	219	
	APR-JUL	54	90	115	60	140	176	192	
	APR-JUN	44	71	89	60	107	134	148	
BIG LOST bl Mackay Reservoir (2)	APR-SEP	61	94	117	60	140	173	195	
	APR-JUL	43	75	97	60	119	151	162	
LITTLE LOST bl Wet Ck	APR-SEP	14.0	21	25	63	30	36	40	
	APR-JUL	11.2	16.4	20	63	24	29	32	
LITTLE LOST nr Howe	APR-SEP	18.0	23	27	61	31	36	44	
	APR-JUL	13.0	17.2	20	61	23	27	33	

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
MAGIC	191.5	16.4	16.8	89.0	Big Wood ab Magic	10	137	45
LITTLE WOOD	30.0	8.7	9.4	13.5	Canas Creek	4	838	28
CAREY VALLEY	NO REPORT				Big Wood Total	14	154	43
MACKAY	44.5	13.7	16.1	26.4	Little Wood River	3	200	34
					Fish Creek	0	0	0
					Big Lost River	4	127	44
					Little Lost River	3	151	40

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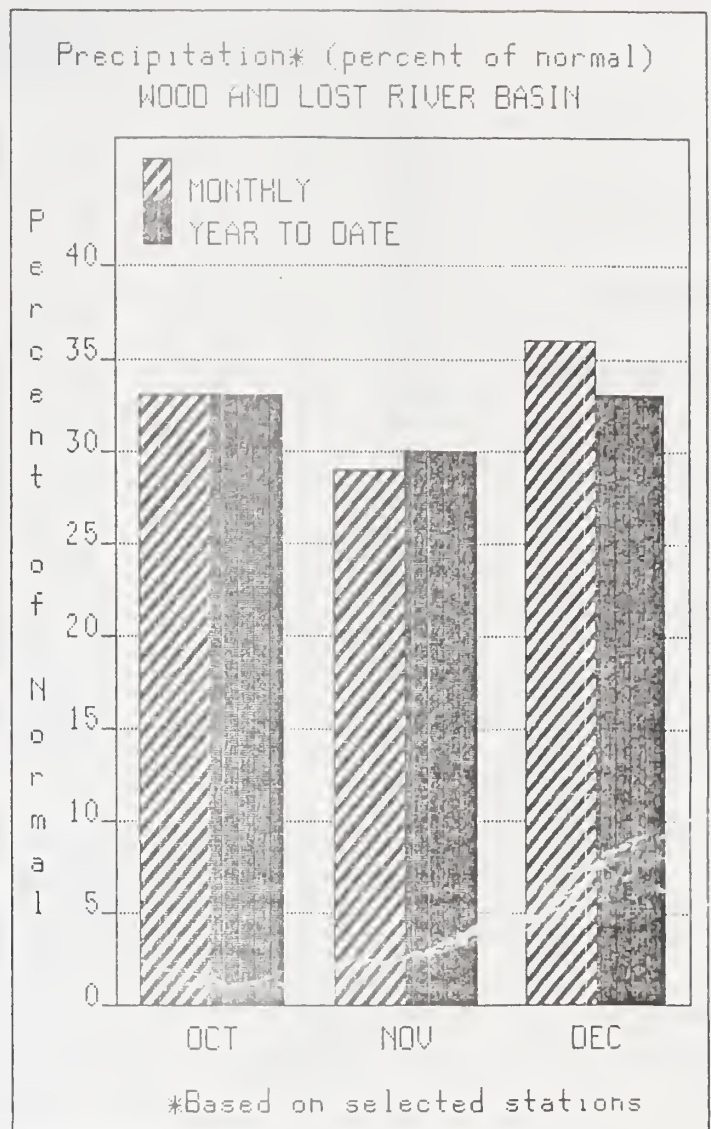
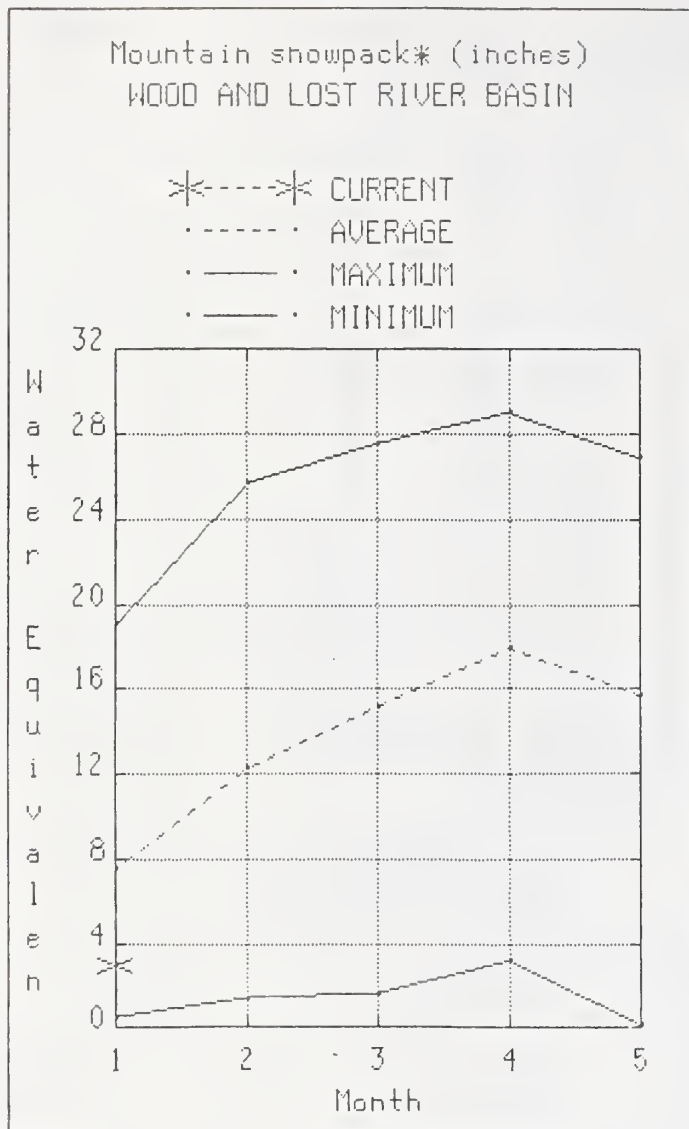
The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

Big Wood, Little Wood, Big Lost, and Little Lost River Basin

JANUARY 1, 1991

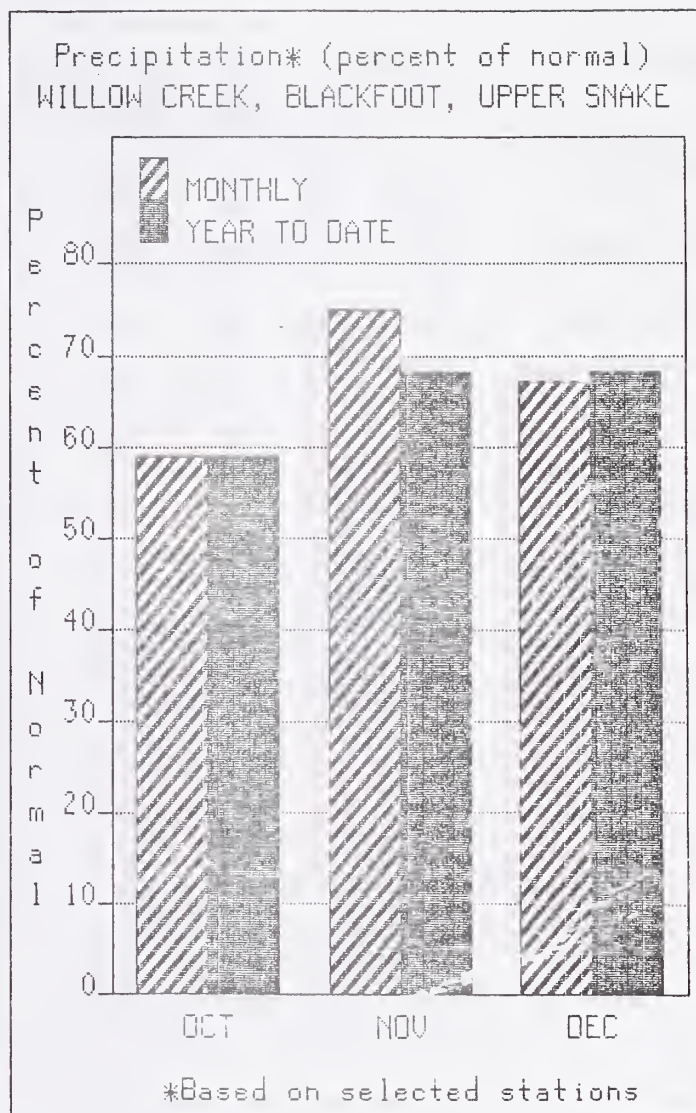
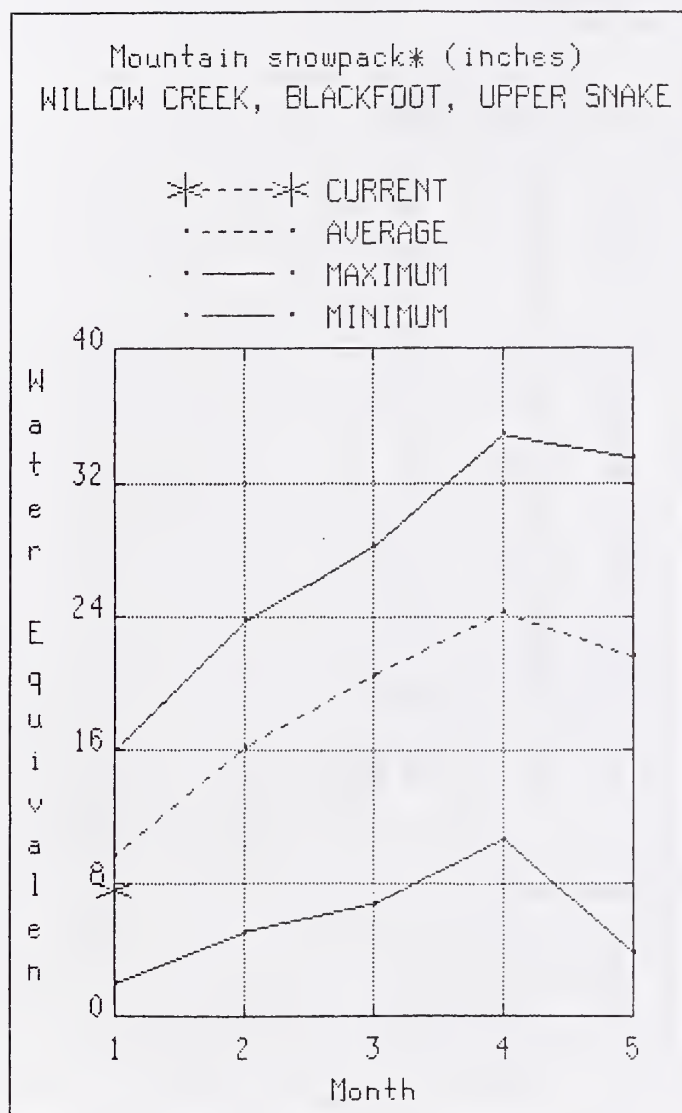


WATER SUPPLY OUTLOOK

Idaho's central mountains once again report the lowest snowpacks in the state, ranging from only 28 to 46% of normal. Streamflow forecasts reflect these dry conditions and range from only 34% of normal for the Big Wood below Magic reservoir to 63% for the Little Lost River. Reservoir storage is another critical element in the bleak water supply outlook: Magic reservoir currently holds only nine percent of its total capacity (18% of average), Little Wood is only 29% full (64% of average), and Mackay reports 31% of capacity (52% of average). All water users in the Wood and Lost River basins should be prepared for yet another low water year, and keep in touch with their local irrigation districts for more specific information.

Willow Creek, Blackfoot, Upper Snake, and Portneuf River Basin

JANUARY 1, 1991



WATER SUPPLY OUTLOOK

Water users in most of eastern Idaho can be optimistic about their water supply for 1991. Snowpack conditions are near or only slightly below normal, ranging from 78% of average for the Snake above Jackson Lake to 104% of average for Willow Creek. The low elevation Camas-Beaver Creek area reports only 48% of normal snowpack. Streamflow forecasts range from 75% of normal for the Henry's Fork to 88% for the Teton River and the Snake near Moran. Storage for 9 reservoirs in the Snake system is 51% of capacity (74% of average). Unless precipitation patterns change drastically, most water users should have an adequate water supply for the 1991 season.

WILLOW CREEK, BLACKFOOT, UPPER SNAKE, AND PORTNEUF RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						25 YR. (1000AF)
		<----- DRIER ----->		CHANCE OF EXCEEDING *		>----- WETTER ----->		
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
HENRYS FORK nr Ashton (2)	APR-SEP	470	530	570	76	610	675	746
	APR-JUL	350	395	425	76	455	500	557
HENRYS FORK nr Rexburg (2)	APR-SEP	805	1040	1200	75	1360	1610	1595
	APR-JUL	625	815	940	75	1070	1250	1260
FALLS nr Squirrel (1,2)	APR-JUL	210	265	305	82	345	400	373
TETON ab S Leigh Ck nr Driggs	APR-SEP	132	154	170	88	186	210	194
	APR-JUL	97	114	126	87	138	155	145
TETON nr St. Anthony	APR-SEP	325	380	420	88	460	515	479
	APR-JUL	265	310	340	88	370	415	387
SNAKE nr Moran (1,2)	APR-SEP	605	710	780	88	850	960	888
PALISADES RESERVOIR inflow (1,2)	APR-SEP	2160	2900	3350	87	3800	4580	3852
SNAKE nr Heise (2)	APR-SEP	2320	3070	3600	87	4130	4890	4142
	APR-JUL	1970	2610	3060	87	3510	4160	3524
SNAKE nr Blackfoot (1,2)	APR-SEP	3120	4150	4880	86	5610	6650	5680
	APR-JUL	2520	3360	3950	86	4540	5370	4589
PORTNEUF at Topaz	MAR-SEP	52	70	82	75	94	112	109
	MAR-JUL	41	56	66	75	76	91	88

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
ISLAND PARK	127.6	81.9	107.1	88.9	Camas-Beaver Creeks	6	202	48
GRASSY LAKE	15.2	13.0	12.4	10.4	Henrys Fork River	8	133	74
JACKSON LAKE	824.7	657.4	563.3	525.6	Teton River	7	134	92
PALISADES	1357.0	344.2	939.3	1013.1	Snake above Palisades	25	127	83
AMERICAN FALLS	1700.0	740.2	742.3	1002.4	Snake above Jackson Lake	10	113	78
BROWNLEE	975.3	780.4	915.8	825.8	Gros Ventre River	2	117	98
BLACKFOOT	348.7	80.3	144.2	230.6	Hoback River	4	157	88
HENRYS LAKE	90.4	78.5	84.4	74.0	Greys River	4	153	81
RIRIE	96.5	43.5	45.4	45.4	Salt River	5	156	85
					Willow Creek	8	165	104
					Blackfoot River	3	159	88
					Portneuf River	4	155	90
					Toponce Creek	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

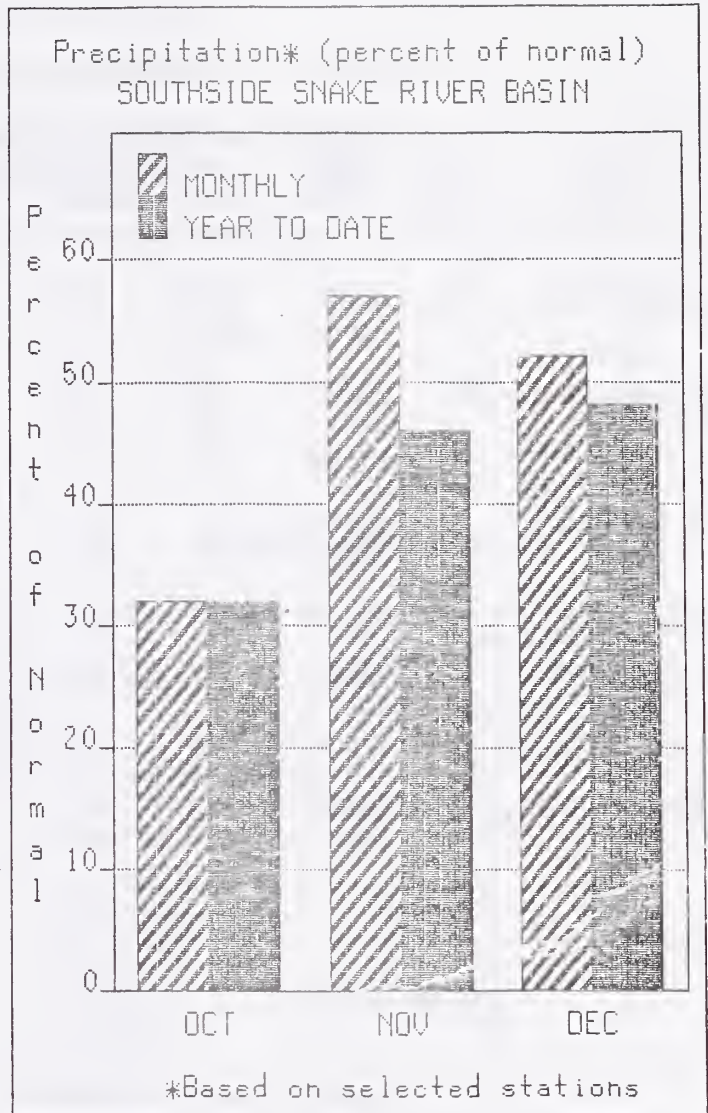
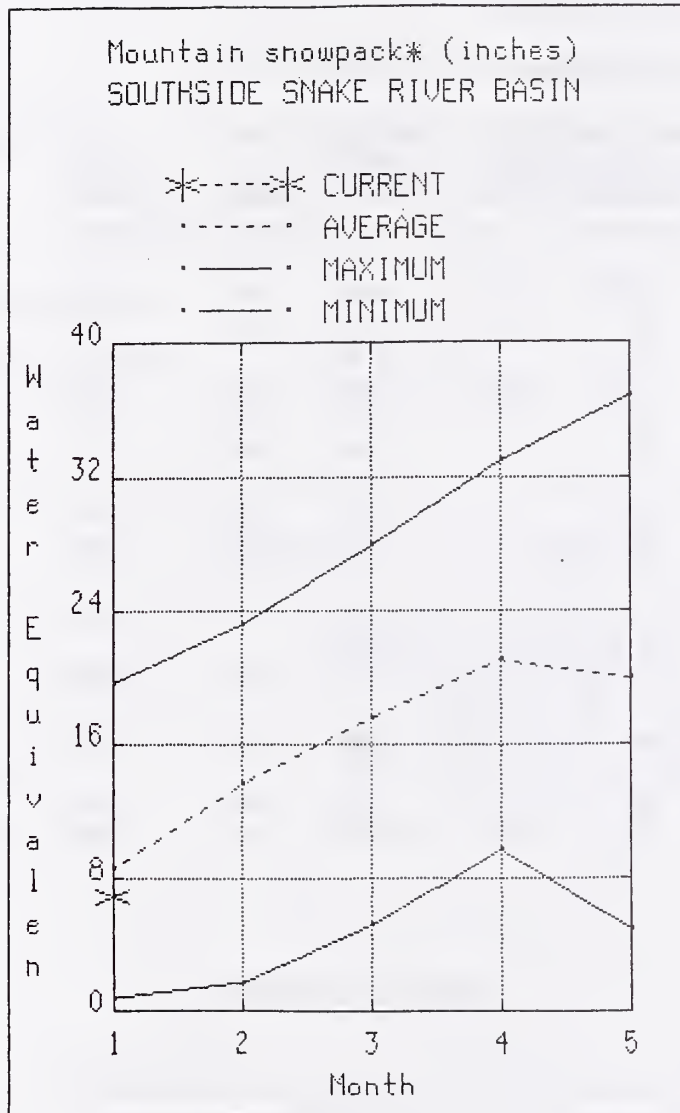
The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

Southside Snake River Basin

JANUARY 1, 1991



WATER SUPPLY OUTLOOK

Snowpacks on the south side of the Snake River are reporting slightly below normal conditions for January 1, ranging from 75% of normal in the Raft River basin to 95% of normal for the Bruneau. Streamflow forecasts range from 53% of normal for the Owyhee River to 77% for Salmon Falls Creek. All reservoirs report well below normal storage for this time of year: Salmon Falls is only 6% full (26% of average), Oakley reports 9% of capacity (30% of average), and Owyhee reservoir is 28% full (48% of average storage). The remaining 3-4 months of the winter snow accumulation season will determine the fate of the 1991 irrigation season, and water users should stay in touch with their local irrigation districts for more specific information.

SOUTHSIDE SNAKE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER ----- FUTURE CONDITIONS ----- WETTER ----->						
		CHANCE OF EXCEEDING *						25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
OAKLEY RESERVOIR inflow	MAR-SEP	14.0	22	28	74	34	42	38
	MAR-JUL	13.0	21	26	74	31	39	35
SALMON FALLS CK nr San Jacinto	MAR-SEP	39	63	79	77	95	119	102
	MAR-JUL	36	59	75	77	91	114	97
	MAR-JUN	35	56	70	77	84	105	91
BRUNEAU nr Hot Spring	MAR-SEP	81	143	185	71	225	290	260
	MAR-JUL	77	136	176	71	215	275	248
OWYHEE nr Gold Ck (2)	MAR-JUL	1.7	12.1	19.2	58	26	37	33
OWYHEE nr Owyhee (2)	APR-JUL	9.0	31	52	60	73	104	86
OWYHEE nr Rome	FEB-JUL	64	200	340	53	480	685	638
OWYHEE RESERVOIR inflow (1,2)	APR-SEP	50	107	250	55	395	540	452
	FEB-JUL	67	240	385	58	530	845	668

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
		THIS YEAR	LAST YEAR	AVG.			
OAKLEY	77.4	7.0	8.4	23.7	Raft River	2	150 75
SALMON FALLS	182.6	11.8	21.7	44.9	Goose-Trapper Creeks	2	195 91
OWYHEE	715.0	200.7	396.3	421.0	Salmon Falls Creek	6	179 84
					Bruneau River	3	148 95
					Owyhee River	2	171 87

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural flow - actual flow may be affected by upstream water management.

GREAT BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		<----- DRIER ----->		FUTURE CONDITIONS		<----- WETTER ----->		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF) (% AVG.)	*	30% (1000AF)	10% (1000AF)	
BEAR RIVER near Harer	APR-SEP	30	120	182	59	245	335	310
CUB RIVER near Preston	APR-SEP			40	77			52
	APR-JUL	15.0	27	36	77	45	58	47

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
BEAR LAKE	1421.0	479.5	715.4	992.6	Bear River (above Harer)	11	133	73
MONTPELIER CREEK	4.0	0.5	0.4	1.8	Montpelier Creek	6	135	70
					Mink Creek	3	148	79
					Cub River	3	170	77
					Malad River	1	133	88

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

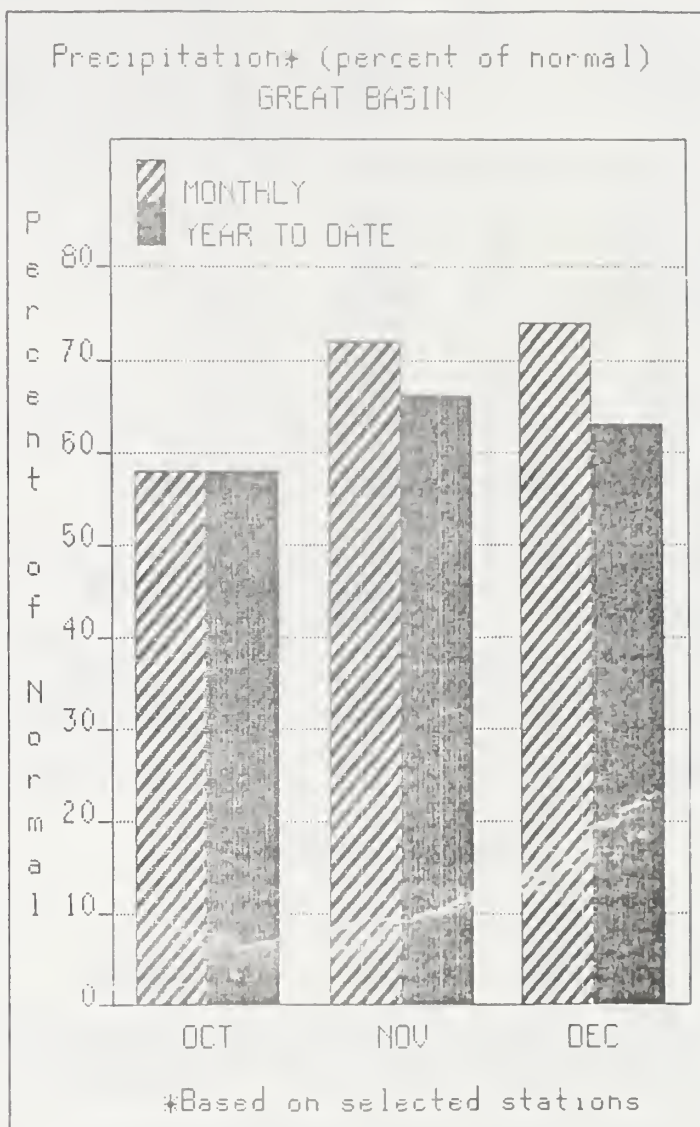
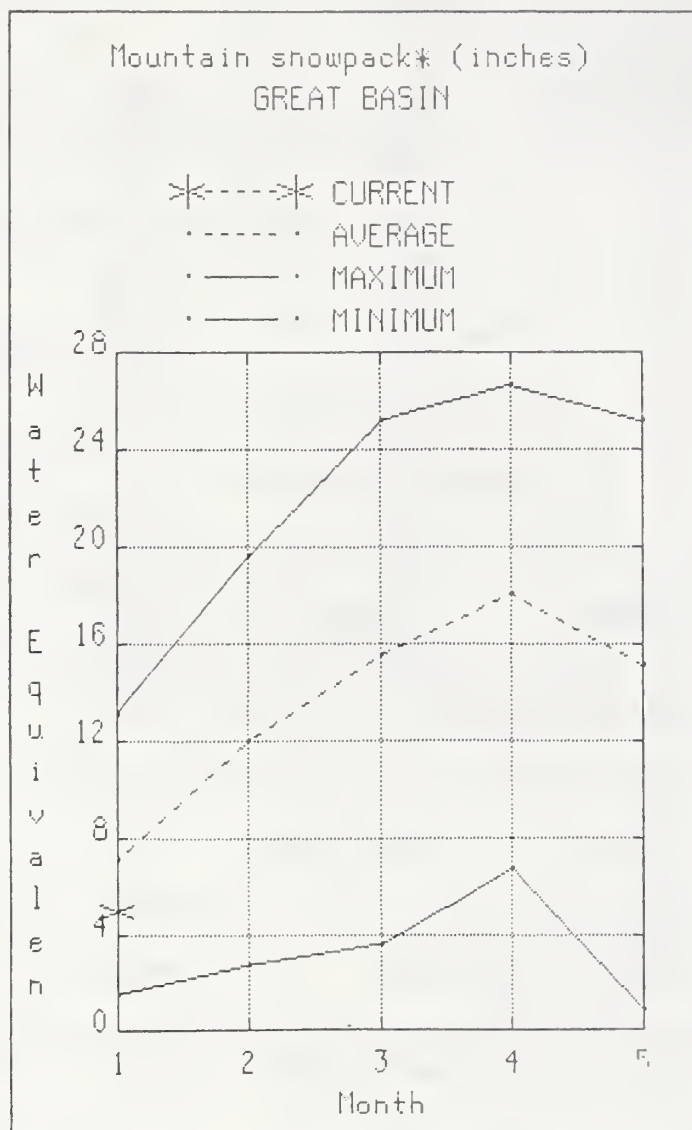
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(2) - The value is natural flow - actual flow may be affected by upstream water management.

Great Basin

JANUARY 1, 1991



WATER SUPPLY OUTLOOK

Snowpacks in the Great Basin area of southeastern Idaho are once again below normal. The Bear River basin reports 73% of average snowpack conditions. Streamflow forecasts reflect these dry conditions and range from 59% of normal for the Bear River to 77% of normal for the Cub River. Reservoir storage is well below normal, with Bear Lake reporting only 34% of capacity (48% of average storage) and Montpelier reservoir only 13% full (28% of average storage). Water users should be aware of the likelihood of yet another low water year and should keep in touch with their local irrigation districts for more specific information.

Basin Outlook Reports

and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact:

**USDA. Soil Conservation Service
Snow Survey Data Collection Office
3244 Elder Street, Room 124
Boise, Idaho 83705
(208) 334-1614 FTS 554-1614**

How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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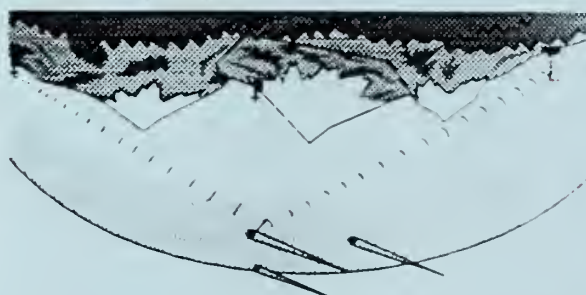
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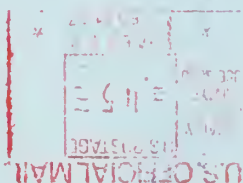
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Basin Outlook Reports



In addition to basin outlook reports, a Water Supply Forecast for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.

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